

AIRS Radio Frequency Drive Test Presentation to SIEC

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Public Safety Interoperable
Communications Office

Overview



- The PSIC Office was able to obtain a Technical Assistance (TA) offering for the RF Drive test from the DHS OEC Interoperable Communications Technical Assistance Program (ICTAP).
- The Drive test was conducted over 10 days, between Dec 5 - 16, 2011.
- Public Safety agencies were made aware of the schedule for the testing due to the disruptive nature of the test tones.
- DPS was available to suspend the testing in case an emergency required the use of the AIRS system.

The Details



- The testing took place along the State's major highways: A team with a specially outfitted vehicle started in Yuma and traversed the State clockwise along a pre-designated route.
- The drive test was a two way test; transmitting on an input frequency and measuring the repeated signal on the output.
- A vehicular radio transmitted a signal modulated by a 1 kHz tone on 821.0125 MHz four times a minute at the top of the minute and at every quarter minute mark.
- The signal was transmitted for approximately 11 seconds starting one second before the top of the minute and the quarter minute marks.

The Details

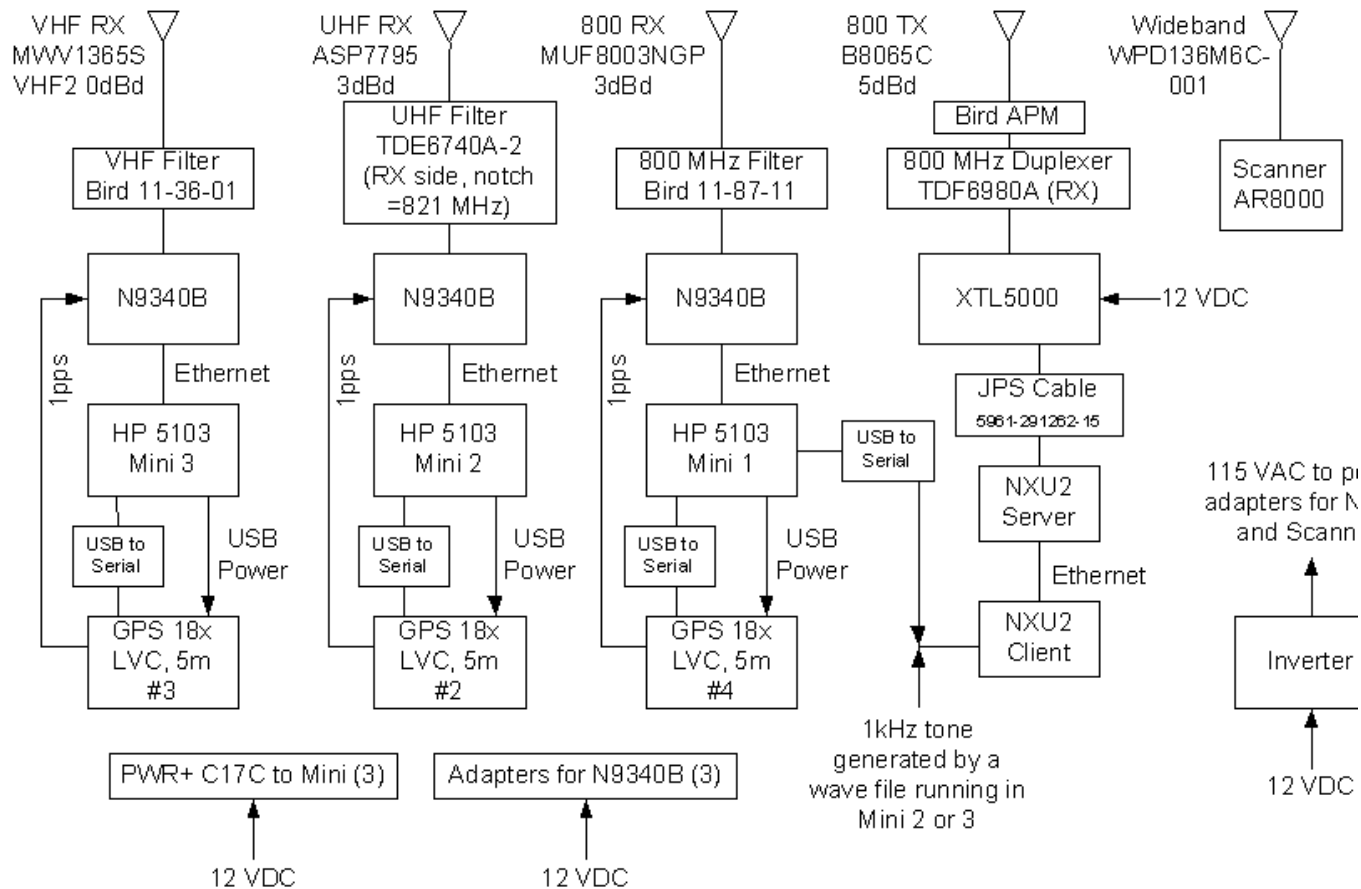


- Three spectrum analyzers in zero span mode recorded the signal receiver on each frequency band for 10 seconds starting at the quarter minute marks. Thus 10 seconds of every 15 seconds of drive time was recorded.
- All of the equipment (transmitter, spectrum analyzer and data logging) was synchronized using GPS.

Schematic Diagram



Figure 1
System Diagram for the Drive Test of the Arizona Interagency Radio System (AIRS)



Load Planning



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The Big Squeeze



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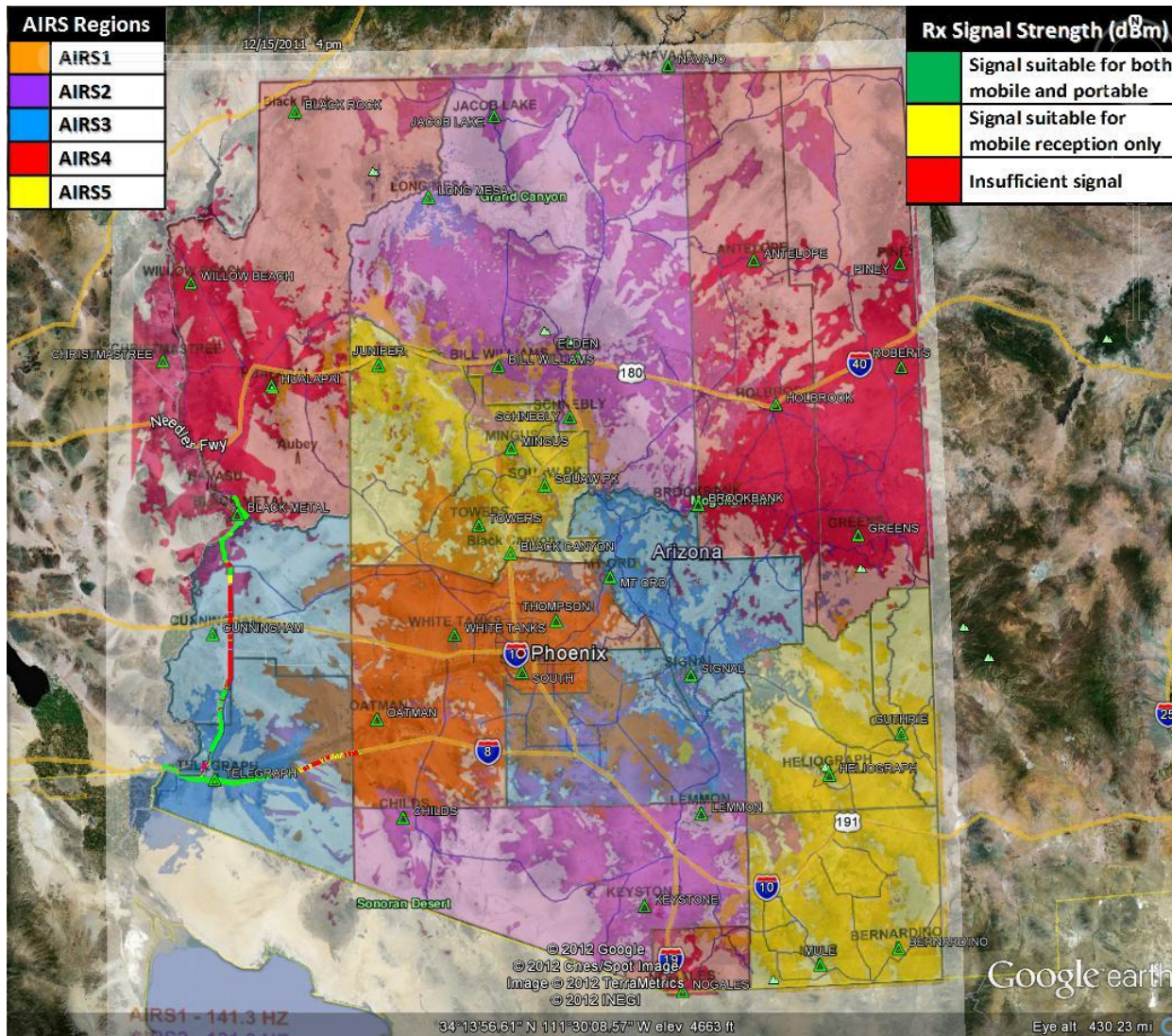
Antennae Arrangement



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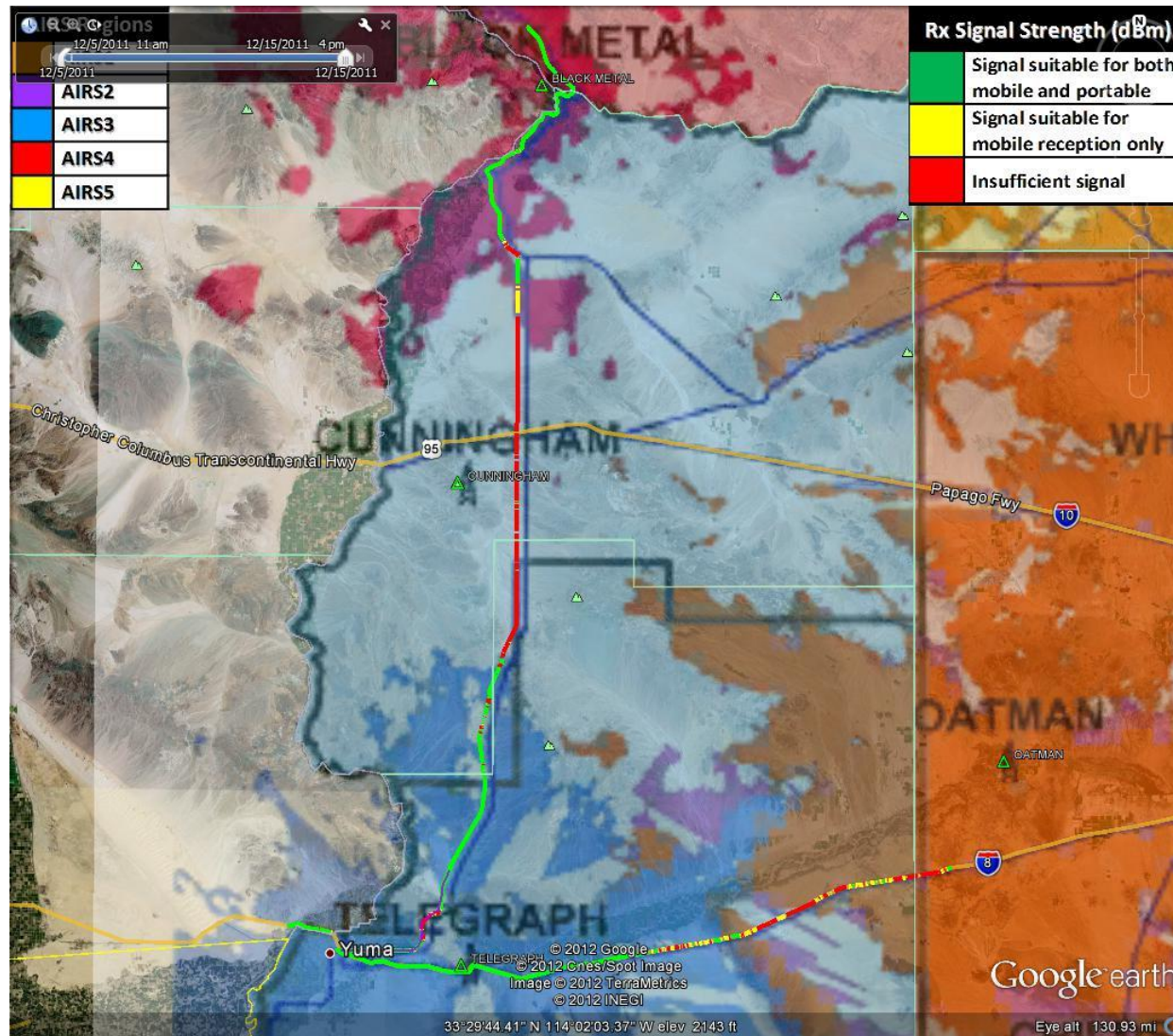
AIRS Region and Coverage Map Overlays



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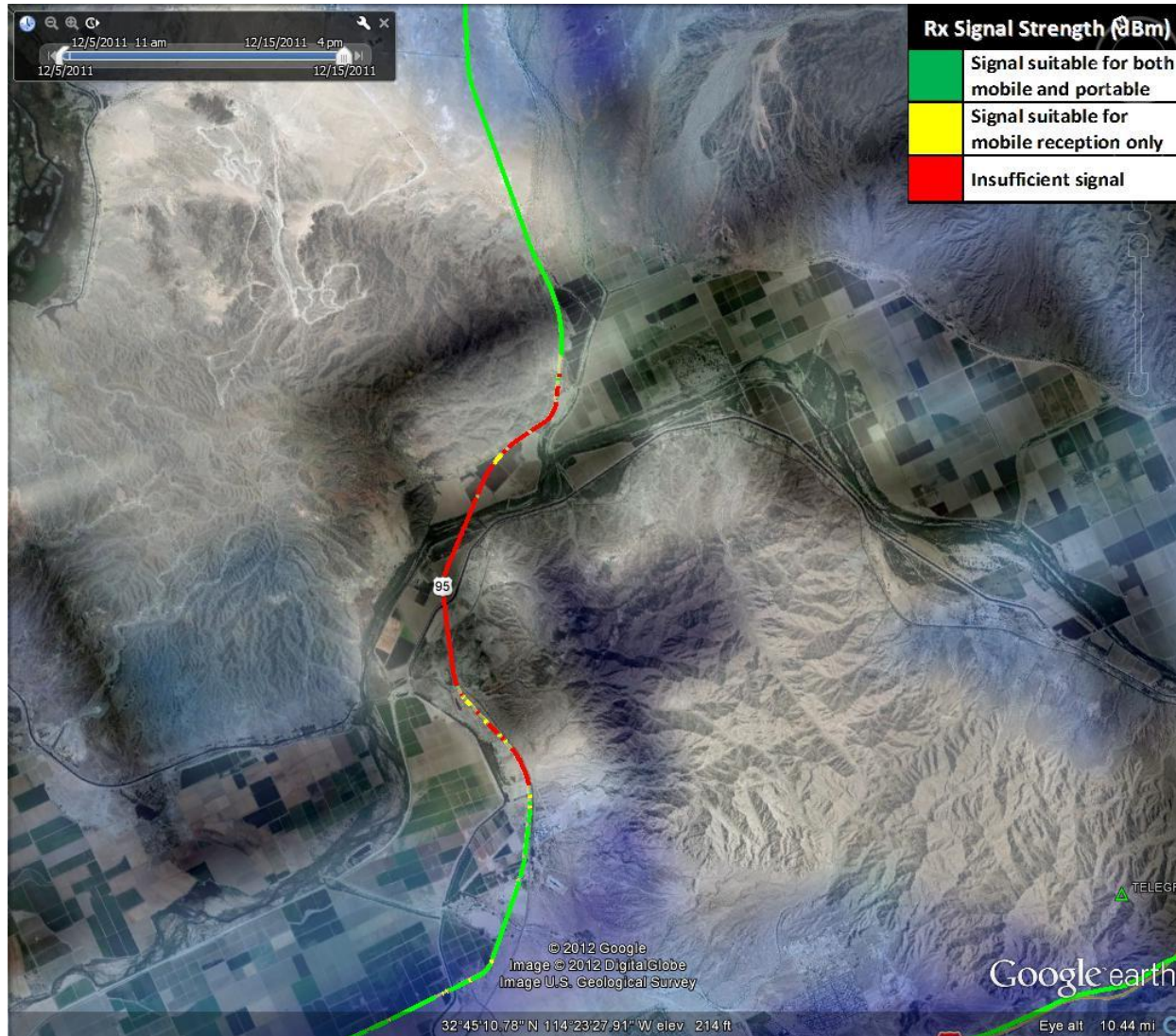
AIRS3 West – Track Full view



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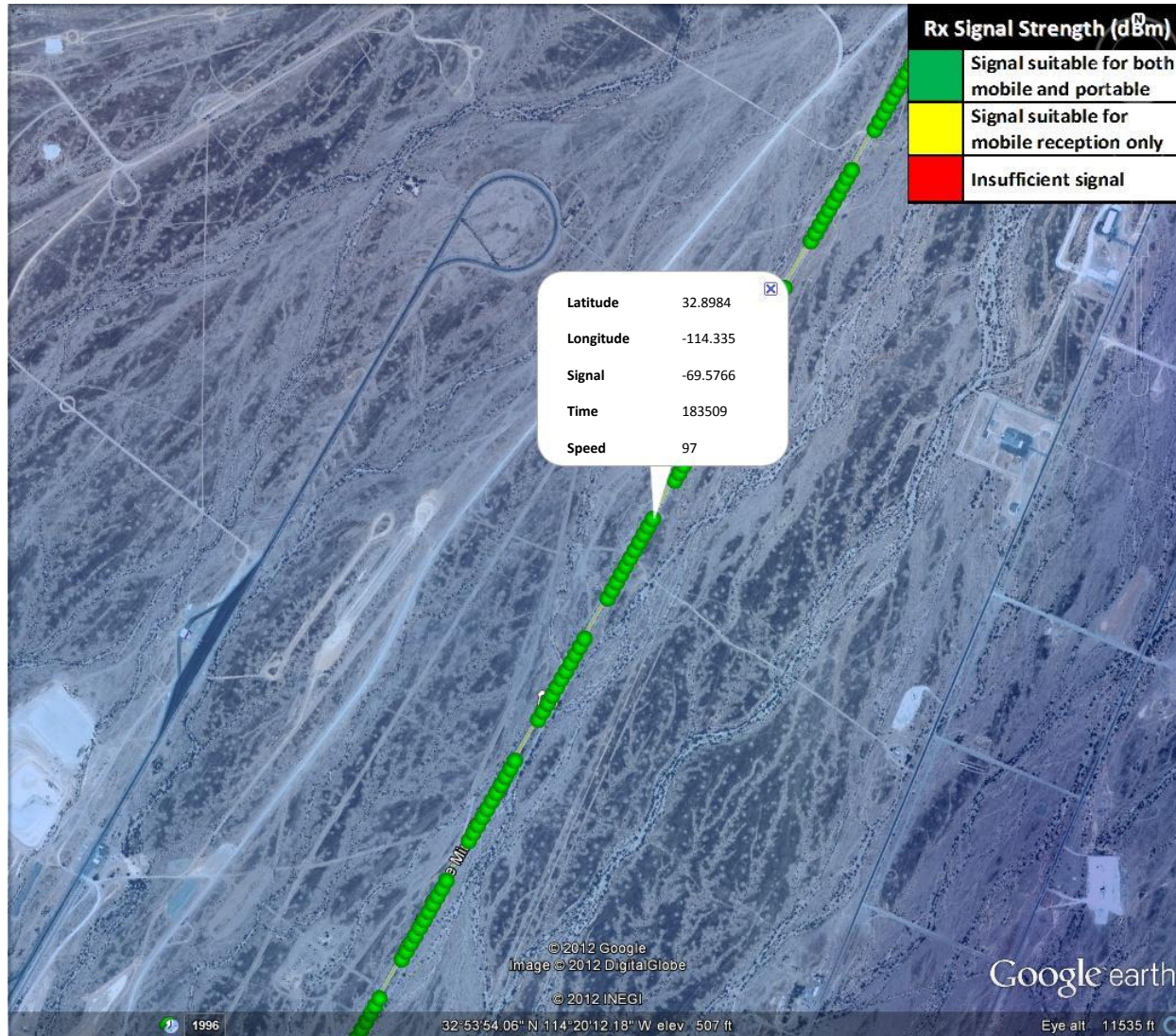
AIRS3 West - Shadow



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AIRS3 West - Data

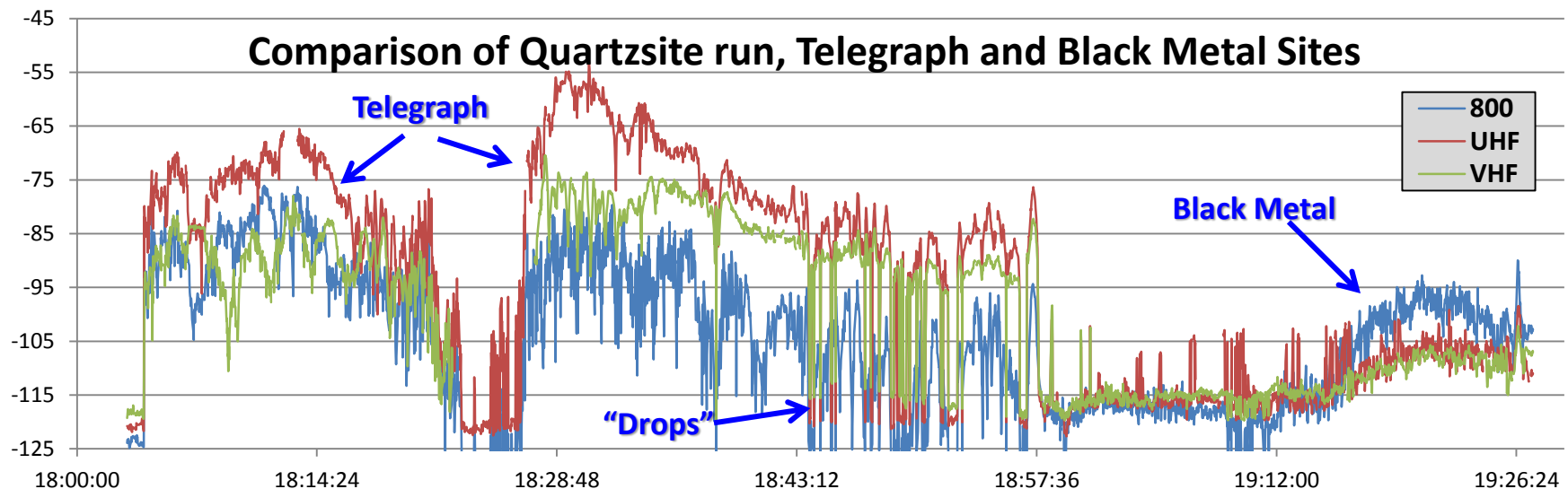
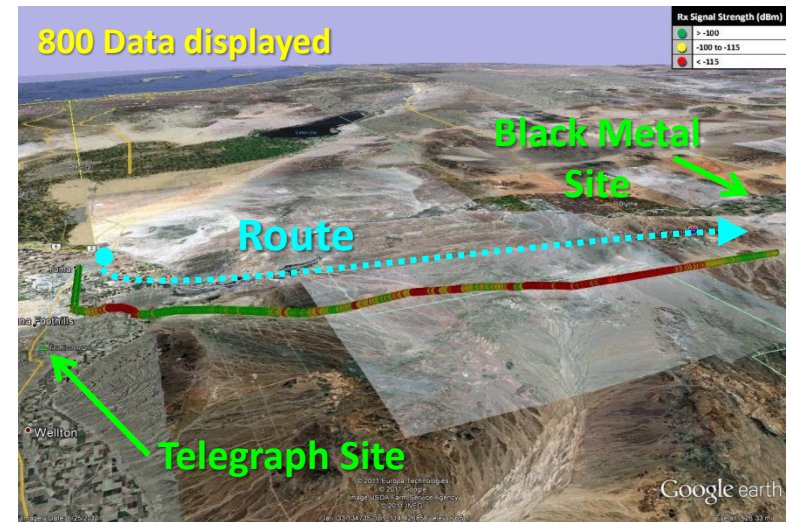


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TriBand: Comparison of Quartzsite Run *Telegraph and Black Metal Sites*

- UHF received the strongest from Telegraph
- 800 received the strongest from Black Metal
- Several “drops” near the middle of the run indicate not hitting the repeater



Summary of Results / Next Steps



- Overall the findings closely align with the existing computer modeled coverage maps generated by DPS.
- The test team observed a problem with the VHF signal strength from Mule (25 dB lower than UHF) and when DPS followed up they found a bad power unit.
- Next Steps:
 - PSIC will post the Google earth files for all AIRS Regions and users can select which region/bandwidth will be of interest to them.
 - Useful for COMLs in planning whether AIRS will be available for an incident.



Thank you!

Questions/Discussion

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